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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,658	12/13/2005	Alan Robert Chapman	M8540/303808	2272

7590 02/09/2011  
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EXAMINER
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MOHADDES, LADAN

ART UNIT	PAPER NUMBER
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1726

MAIL DATE	DELIVERY MODE
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02/09/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/560,658	CHAPMAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LADAN MOHADDES	1726	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 8,9 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,10-12 and 14-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/10/2010 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "the flow field" in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7, 10-12, 14, 16 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Voss et al. (US 5230966, hereafter referred to as VOSS).

With respect to claims 1, 2, 19 and 21, VOSS discloses a flow field plates/separators for a fuel cell (**32** and **34**) comprising with arrays of land defining fluid inlet and outlet channels (**60** and **62**). The inlet channel (**60**) is connected to two branched primary fluid distribution channels (**61**) with a network of interconnected channels (**65**) formed therebetween. The branched fluid distribution channels are wider than the network of channels (Fig. 4).

With respect to claims 3-6, VOSS discloses that two flow field segments that are in parallel and in series with respect to each other (Figs. 4 and 4A).

With respect to claim 7, VOSS discloses that the primary fluid distribution channels form a hexagonal network (Fig. 4A).

With respect to claims 10 and 11, VOSS discloses that both lands that are shaped to define diffusion channels with constant and variable channels (Figs. 4 and 4A).

With respect to claim 12, VOSS discloses that the shape of the lands is non-circular and differs from the symmetry of a group of lands (Fig. 4A).

With respect to claim 14, VOSS discloses that the lands are polygonal (Figs 4 and 4A). Please note the definition of polygon by Merriam-Webster as “ a closed plane figure bounded by straight lines”.

With respect to claim 16, VOSS discloses tilted corners of impermeable land which provides choke point for fluid passage (Fig 4).

With respect to claim 20, VOSS does not disclose that the power deliverable by each flow field plate is in excess of  $750 \text{ mW.cm}^{-2}$  calculated on the working surface of the flow field. As taught by *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977): "Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable". VOSS discloses a flow field plate which is materially and structurally identical to that of instant application and therefore one would expect that power deliverable of the flow field plate will inherently be similar at the same current densities and voltage.

6. Claims 1-6, 10 and 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Ernst et al. (US 5230966, hereafter referred to as ERNST).

With respect to claims 1, 2, 17-19 and 21, ERNST discloses a flow field plates/separators for a fuel cell (**400**) comprising with arrays of land defining gas inlet and outlet channels (**430** and **430'**). The inlet channel (**430**) is connected to two branched primary gas distribution channels (**412**) with a network of interconnected channels (**65**) formed therebetween. The branched gas distribution channels are wider than the network of channels (Fig. 6).

With respect to claims 3-6, ERNST discloses that two flow field segments that are in parallel and in series with respect to each other (Fig. 4).

With respect to claim 10, ERNST discloses that both lands that are shaped to define diffusion channels with constant and variable channels (Fig. 4).

With respect to claim 16, ERNST discloses corners around branched gas channels in the impermeable land which provides choke point for fluid passage (Fig 4).

With respect to claim 20, ERNST does not disclose that the power deliverable by each flow field plate is in excess of  $750 \text{ mW.cm}^{-2}$  calculated on the working surface of the flow field. As taught by *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977): "Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable". ERNST discloses a flow field plate which is materially and structurally identical to that of instant application and therefore one would expect that power deliverable of the flow field plate will inherently be similar at the same current densities and voltage.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. (US 5230966, hereafter referred to as VOSS) as applied to claims 1-7, 10-12, 14 and 19-21 above, and further in view of Abdou et al. (WO 02/069426, hereafter referred to as ABDOU, already of record).

With respect to claim 15, VOSS discloses triangular lands but fails to teach lands that are hexagonal. In the same field of endeavor ABDOU teaches hexagonal lands (Fig. 1A), which are aligned on a hexagonal array (Fig. 1A) to optimize the pressure drop in the fuel flow channels and therefore improving flow distribution (page 4: ln 7-11). Therefore, it would have been obvious for the person with ordinary skills in the art at the time the invention was made to incorporate land shapes of ABDOU in the flow field of VOSS to change the flow direction as taught by ABDOU and to optimize the pressure drop in the fuel flow channels and therefore improving flow distribution.

### ***Response to Arguments***

11. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LADAN MOHADDES whose telephone number is (571)270-7742. The examiner can normally be reached on Monday to Thursday from 8:30 AM to 6:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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/LADAN MOHADDES/  
Examiner, Art Unit 1726

/Patrick Joseph Ryan/  
Supervisory Patent Examiner, Art Unit 1726